

## LETTER TO THE EDITOR

# Embodiment of Environmental Protection Factors in Landscape Art Design

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With the increasing awareness of environmental protection, environmental protection factors are gradually reflected in landscape art design. This paper analyses the concept of low-carbon environmental protection, expounds the characteristics of landscape design, and then analyses the embodiment of environmental protection factors from three aspects: landscape plant design, landscape material design and landscape management.

Landscape Architecture; Environmental Protection; Low Carbon Environmental Protection Concept

## 1 INTRODUCTION

With the rapid development of urbanization and the rapid growth of urban population, the aggravation of environmental pollution, the imbalance of urban ecosystem, the deterioration of the living environment of residents, and the uncontrolled expansion of cities, these are all the problems that our country is facing in the period of the transition from industrialization to backward industrialization (Arango et al. 2017). In the field of landscape design, many countries in the world have begun to implement a wide range of low-carbon environmental and ecological landscapes. There are still many problems in the landscape design of urban forest parks in China, which are manifested in the lack of deep understanding and good compliance of the designers with the theme and principles of environmental protection (Zaid et al. 2019). Therefore, inheriting and developing the concept of environmental protection in landscape design, adhering to the design principles of environmental protection and adopting the design method of environmental protection and conservation, to narrow the contradiction between high-speed economic development and low-carbon environmental protection and energy conservation, has become an arduous task for modern landscape architects and staff in related disciplines to complete in a long period of time.

Huixin Chen published an article entitled “Environmental Management Model of Railway Construction Period from the Perspective of Ecological Protection” in the Journal of Ekoloji Issue 107 in 2019 (Chen 2019). This article analyzed the environmental management mode in the process of railway construction from the perspective of ecological monitoring, and established a six-in-one environmental management mode for railway construction. In the process of environmental monitoring, the analytic hierarchy process (AHP) is used to establish a quantitative index evaluation system to obtain the reference basis for environmental management. The environmental management of railway construction is monitored by using the evaluation and application results of high resolution remote sensing technology in the process of engineering monitoring. The results show that the

ecological environment protection has the greatest impact on the environmental protection evaluation system of railway construction period, with the weight of 0.3415. In addition, the model can also obtain clear remote sensing images of construction environment and grasp the ecological environment of railway construction period in an all-round way conditions, and in the railway construction period of environmental management to play a demonstration role.

Document (Huang 2017) studies how to apply landscape plants reasonably in landscape design, which is the main embodiment of whether landscape design is scientific and exquisite. It is also a measure of the quality of landscape engineering construction. In this paper, the application of landscape plants in landscape design is analyzed in detail from the perspective of art design, ecological environment protection and economic value. Ji (2017) mainly analyses the relationship between regional culture and landscape design, then expounds the expression principle of regional culture elements in landscape design, and illustrates its application in landscape design with examples. Referring to the advantages of Huixin Chen's articles published in the Journal of Ekoloji, this paper analyses the environmental protection factors in landscape art design.

## **2 IDEA DESCRIPTION**

### **2.1 Low-carbon environmental protection concept**

The concept of low-carbon environmental protection is the most common term at present. Its basic meaning is to reduce greenhouse gas emissions. As the global environment has been affected by the wet chamber effect in recent years, people have raised their awareness of environmental protection. Carbon dioxide is the main component of greenhouse gases, so it is called low-carbon. With the development of the world economy and industrialization, people's quality of life is constantly improving. Various industrial products can be seen everywhere. With the increasing population and the decreasing vegetation area, it is difficult to maintain the ecological balance through self-regulation. As a result, natural disasters have become more frequent than ever, with tsunamis, debris flows and sandstorms occurring from time to time (Mukherjee et al. 2017). But at present, the most serious problem is that carbon dioxide emissions on the earth are difficult to control, so the human living environment is facing a threat.

The concept of low-carbon environmental protection has been rising for less than 20 years, so it is difficult to achieve unity in such a short period of time. At the same time, the connotation and essence of the concept of low-carbon environmental protection are also different because of different fields. In the white paper of 2003, the British government defined the concept of low-carbon economy, believing that in the process of economic development, low-cost costs should be reduced as much as possible, while protecting the environment, so as to achieve low-carbon environmental protection. The innovation of this industry shows the positive side of the low-carbon concept. It not only maintains the environment, but also provides a new direction for the development of various industries. It effectively controls the emission of carbon dioxide worldwide and creates a low-carbon living environment. At the same time, it also guarantees the steady growth of the economy and the current demand of human life. Therefore, the essence of the concept of low carbon is as follows:

(1) The concept of carbon is the ideology of coping with climate change, reflecting on and responding to the impact of industrialized society. For the most serious factors affecting the environment to develop solutions, because the greenhouse effect has a greater impact, so the concept of low-carbon spread in every corner of the world. It advocates that while meeting the needs of modern people for material life, we should maintain the balance of the ecological environment, ease the relationship between people and nature, and make them coexist

peacefully and develop together.

(2) Low pollution, low consumption and low emissions are the three goals of the low-carbon concept.

(3) In recent years, the concept of low carbon has broken the traditional production and living mode, which is not in line with the development concept of the industrial revolution. The spread and development of low-carbon concept is not only an increase in environmental protection, but also implies a contest between countries, especially between developed and developing countries, which will herald the new development of global politics and economy in the future.

## **2.2 Landscape Design**

Landscape is a very difficult word to classify. Whether in China or in Western countries, landscape seems to represent different concepts. For example, the landscape in the eyes of ecologists represents the natural ecological environment and ecosystem; the landscape in the eyes of artists is the landscape, which is the object of reproduction and expression; the landscape in the eyes of tourists is the gift of nature and a resource; and in the eyes of geographers, the landscape becomes a scientific term, representing a comprehensive natural geographical area or a surface scene. Following the direction of geographical research, landscape is a very complex term, representing many levels and structures.

Among various landscape designs, the most representative one is garden landscape. The characteristics of landscape design can be summarized from three aspects:

(1) The first characteristic: time interval. Landscape works are more susceptible to the influence of the current environment, so they have the characteristics of time, at a certain time. During the period, due to the social background, social economic development, prosperity and the impact of the times, the same city will have different styles of architecture or landscape due to the development of the times, showing different styles of the times. These designs not only beautify the city, but also a rich cultural asset.

(2) The second characteristic is regional. Due to the different cultural customs in different regions of the world and the differences in natural climate caused by the differences in geographical environment, there are buildings with different styles. Some buildings reflect the local cultural connotation. From the housing design, housing construction and overall appearance, we can feel the strong local cultural atmosphere. Therefore, regionality has become a major feature of landscape design.

(3) Complexity. With the increasing enrichment of material life and the continuous improvement of economic level, modern landscape design has accumulated historical precipitation, using reasonable forms of expression to show a beautiful visual space, which reflects people's spiritual pursuit in the living environment on the premise of material life being guaranteed.

## **2.3 Embodiment of environmental protection factors in landscape art design**

### **2.3.1 Embodiment of environmental consciousness in landscape design of landscape plants**

(1) Cooperative planting of deciduous trees and evergreen shrubs

The results showed that the carbon sequestration and oxygen release capacity of plants ranged from high to low in unit area. First, evergreen shrubs, then deciduous trees, and finally evergreen and deciduous shrubs. In order to embody the concept of low-carbon environment, designers can plant deciduous trees and evergreen shrubs together, to a large extent, improve the carbon sequestration capacity of plants, and make the gardens maintain good carbon sequestration and oxygen release capacity in all seasons.

(2) Collaborative planting of old and young trees of ancient tree species

The results show that the carbon sequestration capacity of trees has a certain relationship with tree age. Generally

speaking, the carbon sequestration capacity of trees with relatively low age is also stronger. Comparing the carbon storage of single tree, the carbon sequestration ability of age-matching tree species is not as good as that of ancient tree species (old tree). However, because the growth period of ancient trees has basically stopped and the amount of carbon storage is very limited, it is difficult to play the best role of low-carbon environmental protection. If young trees and old trees are planted together, they can not only exert the aesthetic and ecological effects of ancient trees, but also ensure that gardens have good carbon sequestration and oxygen release capacity.

### **2.3.2 Ways to embody environmental consciousness in landscape materials**

Selection of landscape materials is an important link in landscape design. The selection of landscape materials can also reflect the awareness of low-carbon environmental protection. Low-carbon environmental protection materials should be selected as far as possible, which not only has strong practicability, but also can improve social benefits. Nowadays, environmental protection materials are widely used in landscape design, mainly for road laying and construction of gardens, and the environmental protection effect is very remarkable. Environmental protection materials have the characteristics of long service life, less pollution emission, low pollution level, and most of them can be recycled. They can fully reflect the concept of environmental protection (Li 2018).

### **2.3.3 Ways to embody environmental consciousness in landscape management**

In the management of landscape architecture, environmental protection consciousness should also be embodied, mainly in the maintenance and construction management of late plants. In the process of construction, in order to protect some of the original landscapes, we should try our best to do a good job of relevant security measures to avoid the secondary damage to the landscape caused by construction. In order to reduce carbon emissions, mechanical operation should be minimized during construction. Landscape conservation can help to maintain the long-term landscape effect, and can effectively promote the growth and renewal of plants to maintain carbon sequestration capacity. However, in the later period of maintenance, due to fertilization, irrigation, pruning and leaf pruning work may continue to emit some dioxide, which is in contradiction with the concept of environmental protection. In order to reduce the contradiction, extensive plant species can be selected at the early stage of design, the area of vertical greening can be increased, or the ecological technology can be innovated to continuously meet the requirements of environmental protection.

## **3 DISCUSSION**

As an important part of the city, landscape plays a vital role in the environmental and ecological regulation of the city. Landscape architects should strive to improve their own design level, while ensuring the visual effect, more consideration should be given to the concept of environmental protection, in order to fully reflect the value of landscape architecture. In addition, we should pay attention to environmental awareness in landscape design, and also in daily production and life, to maximize the quality of the environment and energy efficiency, and effectively reduce energy consumption. Through practical actions to develop towards the road of environmental protection, green, healthy and sustainable development, the coordinated development and sustainable development of economy and environment can be truly realized.

## **4 CONCLUSION**

It is an inevitable trend of social development to embody environmental awareness in landscape design. With the increasingly serious environmental pollution situation and the decreasing resources, more and more people realize

the importance and necessity of environmental protection. In this paper, the embodiment of environmental protection factors in landscape art design is analyzed, aiming at promoting the development of environmental protection concept and giving full play to the ecological value of landscape.

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